

**REMARKS**

On April 29, 2004, Applicant submitted a petition to amend the claim of benefit in this application to include the benefit of the filing date of previously-unreferenced patent applications 08/779,885 and 08/779,830, each filed January 6, 1997. Applicant does not rely on the benefit of the earlier filing date in presenting the arguments below.

1. Rejection of claim 104 under 35 U.S.C. Sec. 112 first and second paragraphs

The Examiner rejected claim 104 under 35 U.S.C. Sec. 112 first paragraph as claiming subject matter not described in the specification, and the Examiner rejected claim 104 under 35 U.S.C. Sec. 112 second paragraph as referring to an apparatus, whereas the claim from which claim 104 depends claims a system. Applicant has amended the claims as suggested by the Examiner in the Office Action mailed June 30, 2003. Accordingly, Applicant submits that these rejections of claim 104 have been addressed.

2. Rejection of claims 98-103 under 35 U.S.C. Sec. 102

The Examiner rejected claims 98-103 on the basis that the blood product produced by the method disclosed in Foley et al. (U.S. Pat. No. 6,319,662) or Lee (U.S. Pat. No. 6,228,995) will be identical to the claimed biological composition. Applicant has cancelled these claims to expedite prosecution and reserves the right to pursue these claims in a continuing application.

3. Rejection of claims 58-73, 75-78, 81-85, and 87-104 under 35 U.S.C. Sec. 103

The Examiner rejected the above-listed claims on the basis that the subject matter is obvious from Foley et al. or Lee in view of Groeger et al. (U.S. Pat. No. 5,605,746) and Samejima (U.S. Pat. No. 4,160,059). The rationale to support the rejection included the statement that

[i]t would have been obvious to provide the adsorbent beads of Foley et al or Lee within a matrix as taught by Groeger et al and Samejima to obtain an expected advantage of the matrix holding the beads to prevent bead migration and bead abrasion, to provide three dimensional distribution and spacing of the beads, to facilitate handling of the beads and separation of the beads from a blood product, and to obtain the function of the matrix as an adsorbent in addition to the beads or

as a filter.... The conditions of dependent claims would have been matters of obvious choice within the skill of the art in view of the disclosures of the references and knowledge common in the art.

Office Action mailed January 13, 2003, pp. 5-6.

The Examiner's response to Applicant's arguments why the above conclusions were incorrect included the following:

Applicants point out that the claimed system as a whole must be considered and that there must be motivation to combine the references. However, Foley et al. and Lee disclose a system and method as claimed except for having the particles immobilized in a matrix. The secondary references disclose particles that can be the same as claimed immobilized in a matrix for use as an adsorptive material to purify a consumable liquid such as water. Groeger et al, in particular, disclose ... advantages of having the particles in a matrix including three dimensional distribution and spacing of the particles, limiting migration of the particles and abrasive loss of particles, and the matrix in addition to the particles functioning to remove undesirable materials. The advantages would have been motivation to immobilize the particles of Foley et al or Lee in a matrix. Applicants have established no unexpected result in immobilizing the particles of Foley et al or Lee in a matrix.

Office Action mailed June 30, 2003, pp. 6-7.

The Examiner further stated that the four references mentioned above indicate that adsorbent particles may have a size either inside or outside the size range specified in the claims, but that it would be obvious to use particles of any size as taught by the references. The Examiner also stated that despite Samejima being silent on particle size, the activated carbon used by Samejima "would have a size within the claimed range" (emphasis added). The Examiner further stated that even if the two primary references of Foley et al. and Lee did not express a reason to retain particles within their systems, the advantages of three dimensional distribution and spacing of the particles, preventing particle migration, the matrix providing a separation function in addition to retaining the particles, and ease of handling rendered it obvious to immobilize particles in a matrix. The Examiner stated also that the advantages discussed by the secondary references of Groeger et al. and Samejima would be expected to be obtained when adsorbing viral inactivating agents in blood as disclosed by Foley et al. or Lee.

Applicant respectfully traverses the rejection. Applicant's claims were rejected erroneously because the rejections are based on art that is not within the scope of the prior art available for a rejection under 35 U.S.C. Sec. 103(a). Further, the art did not contain a motivation to combine references in the manner that the Examiner combined the references. The Examiner's assessment of the patentability utilized a mechanical comparison of the cited references to the claimed subject matter and did not consider the invention as a whole, and the motivation used to combine the references is based in hindsight reconstruction of the invention. The rejections are therefore incorrect and should be withdrawn.

Applicant provides a brief summary of pertinent law below and then discusses the Examiner's arguments and how the rejections do not comply with existing law.

a) Summary of pertinent law

There are a number of factors that must be reviewed when assessing the patentability of claims under 35 U.S.C. Sec. 103(a), including (1) the scope and content of the prior art; (2) the differences between the claimed invention and the prior art; and (3) the level of ordinary skill when determining the obviousness of the claimed subject matter to a person of ordinary skill. (*Graham v. John Deere*, 383 U.S. 1, 17 (1966)).

The scope of the prior art is limited to references that are within the inventor's field of endeavor or are pertinent to the problem that the inventor was solving. (See, e.g., *In re. Oetiker*, 977 F.2d 1443, 1447 (citing *In re. Deminski*, 796 F.2d 436, 442, 230 USPQ 313, 315 (Fed. Cir. 1986)). The art must also contain a legally-recognized motivation to combine prior-art references before multiple references may be combined. (See, e.g., *In re. Dembiczak*, 175 F.3d 994 (Fed. Cir. 1999).) "There must be some reason, suggestion, or motivation found in the prior art whereby a person of ordinary skill in the field of the invention would make the combination. That knowledge can not come from the applicant's invention itself." *In re. Oetiker*, 977 F.2d 1443, 1447 (Fed. Cir. 1992)(citations omitted). See also *In re. Dembiczak*, 175 F.3d 994 (Fed. Cir. 1999) (no suggestion in prior art disclosing trash bags and pumpkin face on outside of paper bags to modify appearance of trash bag to include jack o' lantern face). "Obviousness cannot be established by combining the

teachings of the prior art to produce the claimed invention, absent some teaching, suggestion or incentive supporting the combination.” (In re. Geiger, 815 F.2d 686, 688 (Fed. Cir. 1987) (citation omitted); see also In re. Paulsen, 30 F.3d 1475, 1482-83 (Fed. Cir. 1994)).

The differences between the claimed invention and the prior art are not to be determined mechanically, but instead, are to be judged by considering the invention as a whole. (Hybritech Inc. v. Monoclonal Antibodies, Inc., 802 F.2d 1367, 1383, 231 USPQ 81, 93 (Fed. Cir. 1986), cert. denied, 480 U.S. 947 (1987)) (“ Focusing on the obviousness of substitutions and differences instead of on the invention as a whole ... was a legally improper way to simplify the difficult determination of obviousness.”)(also stating in note 6 “the axiom that the question is not whether the differences would have been obvious but the claimed invention as a whole.”)). In determining the nonobviousness of an invention under Section 103, one cannot apply an “obvious to try” analysis, since an “obvious to try” approach disregards whether the invention as a whole would have been obvious at the time the invention was made. See In re Yates, 663 F.2d 1054, 1057 (CCPA 1981); Application of Goodwin, 576 F.2d 375, 377 (CCPA 1978); aff’d, 599 F.2d 1060 (CCPA 1979);

b) Groeger et al. and Samejima are not within the scope of the prior art

A reference must be within the inventor’s field of endeavor or must be pertinent to the problem the inventor was solving in order to qualify as art upon which the Examiner may base a rejection under 35 U.S.C. Sec. 103(a). Two of the cited references, Groeger et al. and Samejima, do not meet either of these requirements.

U.S. Pat. No. 5,605,746 (Groeger et al.) discloses a composite fiber matrix in which a functional particulate as discussed at 5:45-6:11 is immobilized by composite fibers having a core and polymeric sheath to which the functional particulate adheres. Groeger discusses such uses as vapor sorption (as in military masks at 6:6-8); removing components of a liquid or gas passing through the filter (9:66-10:3); incorporating an abrasive material to make abrasive fabric (1:23-24); releasing an agent into a fluid stream (1:24-26); chemical or catalytic reactivity with a fluid stream constituent (1:24-27); garments (5:32-35); an automobile climate control system (6:3-6); cabin air filters (cars, trucks, subs, etc.); HVAC; clean room pharmaceutical processing, food processing,

smoking lounges, funeral homes, office equipment, casket liners, bandages, packaging, protective wrap, underground bunkers; emission control, chemical waste clean-up, recycled solvents, incineration, sewage plants, sterilization equipment, and liquid filtration for preparing high purity water, whisky, vinegar, etc. (10:13-27).

U.S. Pat. No. 4,160,059 (Samejima) discloses a nonwoven fabric which has heat-fusible fibers and adsorptive material (e.g. activated carbon) attached to the heat-fusible fibers (4:5-10). Adsorptive materials include acid-washed clay, alumina, diatomaceous earth, and activated carbon (id.). Samejima does not discuss a resin as an adsorbent, although Samejima does note that other adsorptive materials may be used for the same or similar purpose to those discussed at 1:22-39. Samejima discusses large-scale use of activated carbon as well as an intent for regeneration and reuse, which use includes: decolorizing or deodorizing e.g. sugar, brewing, sodium glutamate, oil and fat, recover vapors of organic solvents; purify gases; carrier for catalysts for synthesis of vinyl chloride, vinyl acetate, etc; purify tap water; desulphurize industrial waste water & gas (e.g. 1:22-39). Samejima also discusses the use of a small amount of adsorbent without an intent to reuse the adsorbent in such applications as a charcoal filter for cigarettes, a deodorization filter for an air conditioner; or a mask for removing toxic gases (such as solvents or agricultural chemicals)(e.g. 1:52-59). Samejima does not mention a housing other than a cigarette filter, and Samejima likewise does not discuss a blood product.

The Groeger et al. patent is clearly outside the inventor's field of endeavor. This patent discusses such uses as vapor sorption (as in military masks at 6:6-8); removing components of a liquid or gas passing through the filter (9:66-10:3); incorporating an abrasive material to make abrasive fabric; releasing an agent into a fluid stream; chemical or catalytic reactivity with fluid stream constituent; garments; automobile climate control system; cabin air filters (cars, trucks, subs, etc.); HVAC; clean room pharmaceutical processing, food processing, smoking lounges, funeral homes, office equipment, casket liners, bandages, packaging, protective wrap, underground bunkers; emission control, chemical waste clean-up, recycled solvents, incineration, sewage plants, sterilization equipment, liquid filtration for preparing high purity water, whisky, vinegar, etc. (10:13-27). This patent says nothing about processing biological liquids such as blood, and

especially those biological liquids that are to be infused into a human. Groeger et al. is therefore outside the field of the inventor's endeavor and does not qualify as prior art against which the patentability of the claims is to be evaluated under 35 U.S.C. Sec. 103(a).

Likewise, Groeger et al. says nothing with respect to the problem addressed by the inventors. The inventors were concerned with developing the means and methods for reducing the concentration of low molecular weight compounds from a biological composition while maintaining sufficient biological activity that the biological composition may be infused in a human.

Groeger et al. says nothing regarding why the Groeger et al. patent would be useful in forming devices or methods for removing compounds from biological compositions or maintaining efficacy of a biological composition. Groeger et al. therefore is not pertinent to a problem of maintaining efficacy of biological compositions. Consequently, Groeger et al. is not within the scope and content of the prior art against which patentability of the present invention is to be determined.

Samejima likewise is clearly not within the scope of the prior art against which the patentability of Applicant's invention is to be determined. Samejima discusses large-scale use of activated carbon as well as an intent for regeneration and reuse, which use includes: decolorizing or deodorizing e.g. sugar, brewing, sodium glutamate, oil and fat; recovering vapors of organic solvents; purifying gases; as a carrier for catalysts for synthesis of vinyl chloride, vinyl acetate, etc; purifying tap water; desulphurizing industrial waste water and gas; and for such applications as a charcoal filter for cigarettes, a deodorization filter for an air conditioner; and a mask for removing toxic gases (e.g. solvents or agricultural chemicals). These applications are far from the inventor's field.

Samejima is also not pertinent to the problem of removing a compound from a biological composition and maintaining efficacy of the biological composition. There is nothing in Samejima that suggests Samejima's adsorptive nonwoven fabric would be desirable to apply to this problem. Samejima is therefore not within the scope and content of the prior art that is relevant to Applicant's claimed invention.

Since neither Groeger et al. nor Samejima is within the scope and content of the prior art available under 35 U.S.C. Sec. 103(a), there is no basis to reject the claims on combinations of art that include these references. All rejections applied to Applicant's claims are based on Groeger et al. or Samejima. All rejections should therefore be withdrawn.

Applicant consequently respectfully requests that the Examiner withdraw the present rejections because references relied on for the rejections are not part of the scope of the prior art available under 35 U.S.C. Sec. 103(a).

c) The art contains no motivation to combine the references

The art also contains no motivation to combine the references in a manner that renders Applicant's claimed system and method unpatentable, regardless whether Groeger et al. and Samejima are within the scope of the prior art for purposes of 35 U.S.C. Sec. 103(a) or not.

i) No motivation even including Groeger et al. and Samejima in the art

The invention as a whole is drawn to a device having suitable properties for processing biological compositions. The device, as claimed, is a flow device that contains adsorbent particles having a size within a specified range and which particles are immobilized in a matrix. Applicant learned that biological compositions not containing cells are preferably treated differently from biological compositions that contain beneficial cells (for example blood products that contain red blood cells), and therefore the devices used to treat such biological compositions differ.

The primary references, the Foley et al. and the Lee patents, contain nothing that would motivate one of ordinary skill in the field of blood purification to combine the references in the manner expressed in the Office Action.

The Foley patent does not suggest a problem that needs to be solved. The Foley patent likewise does not state that there are any beneficial properties to be attained by immobilizing adsorbent particles of a particular particle size in a system configured for flow operation when processing a biological composition.

The Lee patent likewise does not suggest a problem that needs to be solved and does not otherwise lead one of ordinary skill to conclude there are any beneficial properties to be attained by immobilizing adsorbent particles of a specified particle size within a flow system for processing a biological composition.

The secondary references of Groeger et al. and Samejima likewise do not contain a suggestion to one of ordinary skill in the blood purification field to apply what is taught by the Groeger et al. and Samejima patents to purification of biological cell-containing compositions. Neither Groeger et al. nor Samejima discusses compound removal from a biological composition or why their teachings would have such a use.

None of the references distinguishes flow-through processing a blood product or other biological composition from batch processing. There is nothing in the references that suggests the processing conditions should differ when processing a biological composition that contains cells and one that does not contain cells, and there is especially nothing that indicates that the adsorbent should be within a particular particle size range and also immobilized when processing a blood product or other biological composition.

Nothing in the cited art points one of ordinary skill to make the particular combination of features of adsorbent particle size, immobilization, and flow-through configuration to provide a device and method for processing a biological composition. The claim rejections amount to hindsight reconstruction of the invention from various references, some of which are found outside the field in which the inventor researched.

- ii) The purported motivation used to combine references did not exist in the inventor's field

As discussed above, neither Groeger et al. nor Samejima is in the inventors' field of endeavor, yet these references were relied upon in the rejection for the purpose of supplying the needed motivation to combine the references. A person of ordinary skill in a field would not consult references outside the inventor's field unless the references were pertinent to the problem



addressed by the inventor. The references outside the field cannot provide the needed motivation to combine references, since a person of ordinary skill has no reason to look to references outside the inventor's field unless the problem the inventor is addressing leads that inventor to an area outside his or her field.

The most recent Office Action provided four reasons why the references outside the inventors' field, Samejima et al. and Lee, provided motivation to combine the references. The Office Action stated that a person of ordinary skill in the field of processing biological fluids would be motivated by Samejima et al. and Lee to immobilize resin (1) to obtain a better three-dimensional distribution and spacing of particles, (2) to limit migration and abrasive loss, (3) to remove additional undesirable materials using the matrix itself, and (4) to improve the ease of handling of resin particles.

The inventors were not concerned with these problems when developing their invention to Applicant's representative's knowledge. The inventors of the presently-claimed invention were not seeking to address a problem with compacted resin for instance that might be solved by a better three-dimensional distribution and spacing of particles. Likewise, the inventors were not faced with a problem of resin migration and abrasive loss as is encountered during clothes washing as in Groeger et al., for instance, nor with removing additional undesirable materials using the matrix itself. None of these problems would necessarily lead to a particle size limitation on adsorbent particles as is present in Applicant's claims. Especially, none of these problems would necessarily lead to a particular particle size limitation for a particular device configuration (flow in this instance). The inventors addressed the problems of removal of beneficial components from diverse blood products and developed systems and methods that addressed those problems. Applicant therefore respectfully requests withdrawal of the rejection of claims 58-73, 75-78, 81-85 and 87-104 since the purported motivation for combining the references was derived from references outside the inventors' field and were not pertinent to the problem addressed by the inventors.

iii) The rejection is based in hindsight and the mechanistic reconstruction of Applicant's invention rather than on the invention as a whole

The conclusion of obviousness was also based on mechanical reconstruction of Applicant's invention. As noted previously, the Office Action stated that

Foley et al and Lee disclose a system and method as claimed except for having the particles immobilized in a matrix. The secondary references disclose particles that can be the same as claimed immobilized in a matrix for use as an adsorptive material to purify a consumable liquid such as water. Groeger et al, in particular, disclose ... advantages of having the particles in a matrix including three dimensional distribution and spacing of the particles, limiting migration of the particles and abrasive loss of particles, and the matrix in addition to the particles functioning to remove undesirable materials. The advantages would have been motivation to immobilize the particles of Foley et al or Lee in a matrix.

This analysis focused on components of the claimed subject matter that were missing from a primary reference but which might be supplied by references outside the inventor's field of endeavor, using advantages discussed in the secondary references outside the inventors' field as a reason to combine the references. The Office Action then examined other of the claim limitations, adsorbent particle size and mode of operation, individually, and indicated each of these features was an obvious design choice. The Examiner even went so far as to indicate that although Samejima does not disclose a particle size, the particle size was inherently within the range specified in Applicant's claims.<sup>1</sup> The analysis focused on individual features and thus was a mechanical comparison of each limitation used to define the claimed invention with what the cited references disclose. The analysis failed to consider how Applicant's claimed subject matter was not just a collection of various claim limitations but, instead, defined subject matter that was derived from solving a problem of retaining beneficial components in a biological composition as was faced by the inventors.

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<sup>1</sup> Inherent features are not necessarily relevant to an obviousness determination. "That which may be inherent is not necessarily known. Obviousness cannot be predicated on what is unknown." In re. Spormann, 363 F.2d 444, 448 (C.C.P.A. 1966). Inherent features are of course relevant to an issue of anticipation.

The Examiner's rationale for rejecting the claims as discussed above indicates that the analysis was also performed using hindsight reconstruction. The Examiner's reasoning is based in a piece-meal process of identifying gaps in what a primary reference teaches, finding various secondary references that purportedly fill the gaps, and using statements of advantages in the secondary references that might possibly apply to the primary reference as statements of motivation for someone of ordinary skill in the art to combine the teachings. This is hindsight reconstruction, using Applicant's claims and specification as the guide for selecting references from another field.

The statements of purported motivation derived from references outside the inventors' field also help illustrate how the rejections are based in hindsight reconstruction of Applicant's invention. The references in the inventors' field note no problem of particle loss, particle distribution, or additional filtration needed that the matrix could provide. If a person of ordinary skill was to design a system to address problems associated with particle loss, particle distribution, or additional filtration, the person would still not necessarily be led to provide adsorbent particles in the particle-size range specified in the claims and for a device configured for flow-through operation. It is only by reading Applicant's specification to learn incidental benefits such as improved particle retention that a reference outside the inventors' field appears to be relevant to the inventors' field. Yet, even when the references used in the rejection are combined, the references still fail to suggest the invention as claimed that involves the additional features of adsorbent particular particle size range for a flow-through system.

The rejection clearly ignores the invention as a whole. Applicant did not merely immobilize adsorbent particles. Applicant determined that an inventive device for processing a biological composition has adsorbent particles within a specified particle size range, which particles are immobilized by a matrix and which device is configured as a flow device. Nothing in the cited art leads to this combination of features.

The rationale used in rejecting the claims is also in essence an argument that the references could be combined, not that the references guide one to make a combination. Even if certain advantages from a field such as Groeger et al.'s or Samejima's outside of the field of the primary

references might carry over to another field such as processing biological fluids in which a pathogen is inactivated and beneficial components are retained, this does not indicate that one of ordinary skill would necessarily be motivated to configure a system with immobilized adsorbent particles of a specified particle size range in a flow configuration to process those biological fluids. The fact that an advantage could carry over from one field to another is not the same as a motivation or drive or push for someone to adopt the feature providing that advantage.

As such, the motivation to combine references as stated in the Office Action amounts to a mechanistic and hindsight reconstruction of Applicant's invention, using Applicant's claims and specification to guide both the selection and the combination of particular references. The rejections did not address the claimed invention as a whole as required in an obviousness analysis but, instead, reconstructed Applicant's invention piece by piece.

Applicant therefore respectfully requests reconsideration and withdrawal of the rejections.

4. Sintered medium – claim 59

Claim 59 claims a system according to claim 58 and in which the matrix comprises a sintered polymeric matrix. As claim 59 depends from claim 58, the arguments above are incorporated herein by reference for why the rejection of claim 58 was erroneous.

In addition, the subject matter of claim 59 is not unpatentable under 35 U.S.C. Sec. 103(a) because none of the references discloses a sintered polymeric matrix. Every feature of claimed subject matter must be present in the combined teaching of the references in order for the claimed subject matter to be unpatentable under 35 U.S.C. Sec. 103(a). The references do not disclose a sintered polymeric matrix when the correct definition of a sintered material is applied to the claim.

The Examiner stated that melt bonding of fibers to join fibers and particles together was "sintering" as disclosed in the specification. The Examiner has ascribed an overly broad definition to a "sintered" material. Oxford English Dictionary indicates that a sintered material is a material

that results from fusing particles of a material together using heat and optionally pressure or some other aid. Applicant's specification is consistent with and adopts the ordinary meaning of a sintered medium. The fibers described in Groeger et al. do not qualify as particles, and thus a mass of fused fibers that may be created in Groeger et al. during heating does not qualify as a sintered material. None of the cited references discloses particles that are fused together using heat to form a porous resin. (Note that the adsorbent particles are not melted as occurs during sintering, since melting adsorbent particles (if possible) would destroy the porous structure of the particles.)

Since even when the cited references are combined the cited references do not disclose all features of the claimed subject matter, the cited references cannot render the claimed subject matter obvious and therefore unpatentable under 35 U.S.C. Sec. 103(a). Applicant therefore requests that the rejection be withdrawn.

5. Rejection of claim 74 under 35 U.S.C. Sec. 103

The Examiner rejected claim 74 using arguments discussed above and further in view of Davankov et al. Claim 74 is patentable for the reasons discussed above.

6. Rejection of claims 79, 80, and 86 under 35 U.S.C. Sec. 103

The Examiner rejected these claims using arguments discussed above and further in view of additional references. Claims 79, 80, and 86 are patentable for the reasons discussed above.

7. Obviousness-type double patenting

Applicant will submit a terminal disclaimer in the appropriate applications once other issues with respect to the claim rejections are resolved. Applicant offers to submit the disclaimer merely as an administrative convenience, and no inferences are to be drawn as to whether the claims in the present application are obviousness in view of claims in copending applications as applied by the Examiner.

Applicant above has discussed the problem addressed by the inventors in order to provide information on how the invention was created. The invention is of course defined by the claims and is not limited to only devices and methods that address the problem. The discussion of how the invention came to exist is made in the context that the claimed subject matter is not prima facie obvious to one of ordinary skill in the field. Since prima facie unpatentability is not established by the references, there is also no need to limit claimed subject matter to that which exhibits surprising results.

The claims are patentable over the cited references, and Applicant therefore respectfully requests allowance of the pending claims.

If it is determined that a telephone conference would expedite the prosecution of this application, the Examiner is invited to telephone the undersigned at the number given below.

In the event the U.S. Patent and Trademark Office determines that an extension and/or other relief is required, applicant petitions for any required relief including extensions of time and authorizes the Commissioner to charge the cost of such petitions and/or other fees due in connection with the filing of this document to Deposit Account No. 03-1952 referencing docket no.282172000404. However, the Commissioner is not authorized to charge the cost of the issue fee to the Deposit Account.

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Respectfully submitted

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